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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/661,653

Applicant(s)

AULT, EARL R

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/9/03.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 July 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

In response to the amendment filed on 7/9/03, Claims 1, 3-5 and 9 are amended. Claims 1, 3-5 and 9 are pending.

Claim Rejections - 35 USC § 103

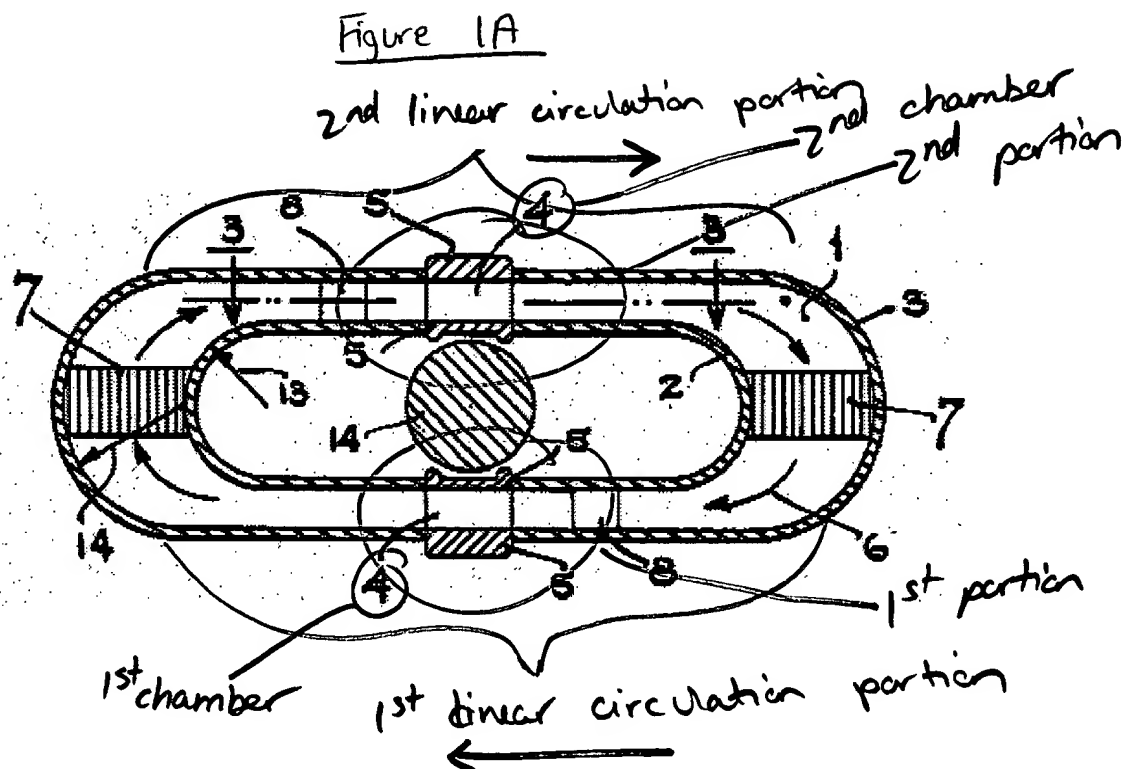
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. (U.S. Patent No. 3,663,891) in view of Chun (U.S. Patent No. 4,654,855) and Scheps (U.S. Patent No. 5,307,358). Regarding Claim 1, Kocher et al. teach in Figure 1 a laser comprising a first lasing chamber/cell (12), a pumping device (22), a liquid active material, and a closed loop circulation system with a first portion to circulate said liquid into and out of said first lasing chamber (12). Kocher et al. do not teach a second lasing chamber. Chun teaches in Figure 1A a gas laser circulation system with two chambers (4). Since a gas is a flowing liquid, it would have been obvious to one of ordinary skill in the art at the time of the invention to use two chambers in Kocher et al., as taught by Chun, to provide continuous and efficient lasing activity. Furthermore, incorporating a second lasing chamber with the same overall configuration as the first lasing chamber is mere duplication of parts of the essential working parts of device, which has been held to involve routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Chun further teaches in Figure 1A a closed loop circulation system

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with a first linear circulation path through said first lasing chamber and a second linear circulation path through said second lasing chamber, wherein said second linear circulation path is opposite in direction to said first linear circulation path. Chun also teaches in Figure 1A a first circulating portion for said first lasing chamber and a second circulating portion for said second lasing chamber. (See Chun Figure 1A below). Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant(s) used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art.



Regarding Claim 3, Kocher et al. teach a pump (24) and a heat exchanger (26).

Regarding Claim 4, Kocher et al. teach in columns 1-3 that said circulation system prevents optical distortion from thermal effects. Also, the Applicant states in the specification on page 16 lines 1-7 that these features for reducing the thermal effect are known in the art.

Regarding Claim 5, see discussions on Claims 1 and 4. Furthermore, Chun teaches in Figure 1A that said first and second portions have substantially equal length.

Regarding Claim 9, Kocher et al. teach in Figure 1 a laser comprising a first lasing chamber/cell (12), a pumping device (22), a liquid active material, and a closed loop circulation system with a first portion to circulate said liquid into and out of said first lasing chamber (12). Kocher et al. do not teach a second lasing chamber. Chun teaches in Figure 1A a gas laser circulation system with two chambers (4). For purposes of this area of art (active medium circulation system), a gas is a flowing liquid. Thus, it would have been obvious to one of

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ordinary skill in the art at the time of the invention to use two chambers in Kocher et al., as taught by Chun, to provide for continuous and efficient lasing activity. Furthermore, incorporating a second lasing chamber with the same overall configuration as the first lasing chamber is mere duplication of parts of the essential working parts of device, which has been held to involve routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Chun further teaches in Figure 1A a first circulating portion for said first lasing chamber and a second circulating portion for said second lasing chamber. (See Chun Figure 1A above). Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant(s) used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art.

Response to Arguments

Applicant's arguments filed 7/9/03 with respect to claims 1, 3-5 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Nevertheless, Applicant's arguments regarding to the Ti^{3+} doping has been fully considered but is not persuasive. The Applicant argues that Scheps does not teach doping a liquid, but rather "a low concentration solute which acts similar to a dopant". The argument is not persuasive because Scheps does teach that titanium ions may be used as a dopant to obtain a particular output wavelength (column 5 line 65 to column 6 line 10) and that the liquid solute serves the same function as doping the liquid. (column 9 lines 8-19). The method of using a low concentration solute in a liquid to act as a dopant provides the same function as the doping of a solid-state material.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803.

The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Davienne Monbleau

DNM
August 13, 2003

Paul Ip

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